

Abstract of the Disclosure

1 A spatial resolution enhancement and dynamic range
2 extension for a Computerized Airborne Multicamera Imaging
3 System (CAMIS). CAMIS is a multispectral imaging system for
4 diverse manned and unmanned aerial vehicles to fly along
5 flexible paths and altitudes for a wide variety of
6 applications. CAMIS comprises four spectral bands of
7 progressive scan CCD video cameras with 782 x 576 square pixels
8 each, giving a total of 1.82 million effective pixels. These
9 cameras are synchronized and aligned in parallel with sub-
10 pixel-accurate spatial offsets over a common field of view. A
11 software procedure interpolates the original four-band 782 x
12 576 captures into 1564 x 1152 ones using a bi-linear algorithm,
13 and then performs geometric correction and band-to-band pixel
14 registration. The result is a more precisely registered,
15 spatial resolution enhanced multispectral image, sized 1540 (H)
16 x 1140 (V) x 4 (Bytes). The CAMIS CCD cameras include a
17 controllable electronic shutter, which permits the system to
18 acquire a desirable range of signals by a computed exposure,
19 and then bracket it with two additional up/down-stepped
20 exposures into computer memory. The integrated data set of the
21 multiple stepped exposures results in effectively extending the
22 dynamic range of the measurement.